



EPA Office of Federal Activities

REVIEW DRAFT

Guidance For Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses

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EPA Draft Environmental Justice Guidance - Chapter 1

1.0 PURPOSE

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Executive Order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. In an accompanying Presidential memorandum, the President emphasizes that existing laws, including the National Environmental Policy Act (NEPA) provide opportunities for federal agencies to address environmental hazards in minority communities and low-income communities. In April of 1995, the U.S. Environmental Protection Agency (EPA) released its strategy on environmental justice establishing Agency-wide goals and defining the approaches by which EPA will ensure that disproportionately high and adverse human health or environmental effects on minority communities and low-income communities are identified and addressed. This strategy also establishes Agency-wide goals for American Indian, Alaska Native, and Indigenous Environmental Protection. Many EPA offices are developing more specific plans and guidance to implement Executive Order 12898 and the aforementioned Agency-wide strategy. This document serves as a guidance to implement environmental justice goals into EPA's preparation of environmental impact statements (EISs) and environmental assessments (EAs) under the National Environmental Policy Act (NEPA).

The National Environmental Policy Act of 1969 (42 U.S.C. Section 4321 et seq.) serves as the Nation's basic environmental protection charter. A primary purpose of NEPA is to ensure that federal agencies consider the environmental consequences of their actions and decisions as they implement their respective missions. For "major Federal actions significantly affecting the quality of the human environment," the federal agency must prepare a detailed environmental impact statement (EIS) that assesses the proposed action and all reasonable alternatives. EISs are required to be broad in scope, addressing the full range of potential effects of the proposed action on human health and the environment. Regulations established by both the Council on Environmental Quality (CEQ) and EPA require that socioeconomic impacts associated with significant physical environmental impacts be addressed in the EIS.

Environmental assessments (EAs) have also become very important components of the NEPA process. Originally intended to serve as a mechanism for determining whether an agency's action was significant, thereby meriting an EIS, EAs are an important analyses on their own. As a matter of policy, EAs completed by EPA regularly address socioeconomic effects associated with environmental impacts of Agency actions.

The purpose of this guidance is to assist EPA staff responsible for developing EPA NEPA compliance documentation, including EISs and EAs, in addressing a specific concern -- that of environmental justice. Analyzing and addressing environmental justice concerns is entirely consistent with the NEPA process. This guidance is intended to: (1) heighten awareness of EPA staff in addressing environmental justice issues within NEPA analyses and considering the full potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations; (2) present basic procedures for identifying and describing junctures in the NEPA process where environmental justice issues may be encountered; (3) present procedures for addressing disproportionately high and adverse effects to evaluate alternative actions; and (4) present methods for communicating with the affected population throughout the NEPA process. As seen throughout this guidance document, environmental justice issues can be and should be analyzed and addressed using many of the same tools currently intrinsic to the NEPA process.

1.1 Background

1.1.1 What is Environmental Justice?

Environmental Justice has been defined by a variety of organizations interested in the topic. EPA's Office of Environmental Justice offers the following definition:

"The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."

The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

1.1.2 Executive Order 12898

Executive Order 12898 and its accompanying memorandum have the primary purpose of ensuring that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations ..." (See Endnote 1) The Executive Order also explicitly called for the application of equal consideration for Native American programs. To meet these goals, the Order specified that each agency develop an agency-wide environmental justice strategy.

The Presidential Memorandum that accompanied the Executive Order calls for a variety of actions. Four specific actions were directed at NEPA-related activities, including:

1. Each federal agency must analyze environmental effects, including human health, economic, and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA.
2. Mitigation measures outlined or analyzed in EAs, EISs or Records of Decision (RODs), whenever feasible, should address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities.
3. Each federal agency must provide opportunities for community input in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving accessibility of public meetings, official documents, and notices to affected communities.
4. In reviewing other agencies' proposed actions under Section 309 of the Clean Air Act, EPA must ensure that the agencies have fully analyzed environmental effects on minority communities and low-income communities, including human health, social, and economic effects.

As noted earlier, the purpose of this guidance is to assist EPA personnel in identifying and evaluating disproportionately high and adverse human health or environmental effects in minority communities and low-income communities within the context of NEPA documents prepared by EPA for actions which EPA must comply with the procedural requirements of NEPA (e.g. research and development activities, facilities construction, wastewater treatment construction grants and EPA-issued National Pollution Discharge Elimination System (NPDES) permits for new sources), including instances where EPA satisfies its NEPA compliance obligation as a cooperating agency. It is also meant to improve the affected communities access to the NEPA process. It does not provide

guidance related to other federal agencies' actions or for EPA's review of other federal agencies' NEPA documents.

1.2 Principles/Philosophy of this Guidance

This guidance highlights important ways in which EPA-prepared NEPA documentation may help to identify and address EJ concerns. The rationale and associated implications of the guidance will be described in the remainder of this document. This section provides a summary listing of the major implications.

- * EPA officials should be vigilant in identifying where EPA actions may have disproportionately high and adverse human health or environmental effects on minority and/or low-income communities. Moreover, identification should occur as early as possible, preferably during any initial screening exercise.
- * The screening exercise should identify the presence of minority or low-income communities and whether such communities are likely to experience adverse environmental or human health effects as a result of proposed federal actions.
- * The sensitivity to environmental justice concerns should sharpen the focus of the analysis. While the analytical tools to be used are similar, the analysis should focus both on the overall affected area and population and on smaller areas and/or communities within the affected area.
- * It is desirable that the team of analysts which is tasked with identifying and addressing environmental justice issues, be comprised of an interdisciplinary staff mix that includes individuals familiar with environmental justice issues, public participation mechanisms and outreach strategies, Native American concerns and issues as necessary.
- * Where proposed actions may affect or potentially affect tribal lands or resources (e.g., treaty-protected resources, cultural resources and/or sacred sites (See Endnote 2)) EPA will request that the affected Indian Tribe (See Endnote 3) seek to participate as a cooperating agency. Where differences occur regarding the preferred alternative or mitigation measures that will affect tribal lands or resources, the Indian Tribe may request that a dispute resolution process be initiated to resolve the conflict between the tribe and the Agency.
- * Environmental justice concerns may lead to more focussed analysis that identifies significant effects that may otherwise have been diluted by an examination of a larger population or area. Environmental justice concerns should always trigger the serious evaluation of alternatives as well as mitigation options.
- * Identifying the "affected community" is particularly important. The effects of the action will often vary depending on the distance from the action and the type of effect created by the action (e.g. airborne or waterborne pollution, increased traffic). Effects on the community should be discussed in terms of reasonable increments from the site of the action.
- * Community involvement is particularly important in cases of potential environmental justice issues. Early and sustained communications with the affected community throughout the NEPA process is an essential aspect of environmental justice.
- * For meaningful community involvement to be achieved in circumstances where environmental justice is an issue, technical assistance supplied by EPA should be available to the community to assist in their full participation (e.g., interpretation of scientific documents, development of alternatives or mitigation measures).
- * Every EA and EIS, and every FNSI (Finding of No Significant Impact) and ROD, should

document the analyses used to identify the presence or absence of disproportionately high and adverse effects and present the results of those analyses.

1.2.1 EPA Actions Requiring NEPA Compliance

EPA is required to comply with NEPA for its research and development activities, facilities construction, wastewater treatment construction grants under Title II of the Clean Water Act and under Appropriations Bills, and EPA-issued National Pollution Discharge Elimination System (NPDES) permits for new sources subject to new source performance standards. The Agency is exempted by statute for actions taken under the Clean Air Act and for most Clean Water Act programs. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), requires EPA to comply only with the substantive, not the procedural, requirements of other environmental laws for on-site responses. In the case of other EPA programs, the courts have found EPA procedures to be "functionally equivalent" to the NEPA process and therefore these EPA programs are exempt from NEPA procedural requirements. Also, EPA voluntarily prepares EISs for a number of actions pursuant to a long-standing statement of Agency policy.

Exhibit 1 identifies EPA's major program areas and indicates which actions are subject to NEPA, which Congress has exempted from NEPA, which have been found to be functionally equivalent to NEPA, and which receive NEPA-like analyses.

1.2.2 EPA Review of Proposed Actions Under Clean Air Act Section 309

As a result of Section 309 of the Clean Air Act, EPA has a key role in the overall implementation of NEPA. Specifically, Section 309 mandates that EPA "review and comment in writing on the environmental impact of any matter relating to duties and responsibilities granted pursuant to this chapter or other provisions of the authority of the Administrator, contained in any (1) legislation proposed by any federal department or agency, (2) newly authorized federal projects for construction and any major federal agency action (other than a project for construction) to which Section 4332(2)(C) of this title applies [subject to Section 102(2)(c) of NEPA], and (3) proposed regulations published by any department or agency of the Federal government. Such written comment shall be made public at the conclusion of any such review." (42 U.S.C. Section 7609(a))

EPA is further directed by the Presidential Memorandum that accompanied Executive Order 12898 to conduct 309 reviews which ensures that agencies fully analyze environmental effects of the proposed actions on minority communities and low-income communities, including human health, social, and economic effects. As a result of both Section 309 and the Presidential Memorandum, EPA is able to assist other federal agencies in evaluating proposed actions that are subject to NEPA by identifying possible environmental justice concerns that may result from such actions and by offering alternative solutions and mitigation measures for unavoidable impacts.


Although mention is made here of EPA's responsibilities under Section 309, this document is not intended to provide guidance for Section 309 reviews. However, while EPA finalizes a separate guidance for Section 309 reviews, this guidance can be referenced in the interim. Guidance in this document is intended only for EPA's conduct in actions for which EPA must comply with NEPA and where EPA has jurisdiction as a cooperating agency. It does not provide guidance related to other federal agencies' actions or for EPA's review of other federal agencies' EISs.




Exhibit 1: Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities - Part I



Exhibit 1: Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities - Part II

 [Exhibit 1: Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities - Part III](#)

 [Exhibit 1: Summary of EPA Program NEPA Requirements and Equivalent or Voluntary Activities - Part IV](#)

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1.3 Organization of this Guidance

The remainder of this guidance is organized as follows: Chapter 2 describes key environmental justice terms and factors and the application of the key definitions and factors in the context of standard NEPA analyses; Chapter 3 describes key steps in the NEPA process, including both EISs and EAs, where analyses of environmental justice concerns should be incorporated; Chapter 4 discusses public participation approaches of direct relevance to minority and/or low-income communities; and Chapter 5 provides a brief overview of methodological tools that can be used to identify and assess potentially disproportionately high and adverse effects.

Endnote 1: Throughout this guidance, the term "disproportionately high and adverse effects" is used interchangeably with the longer phrase "disproportionately high and adverse human health or environmental effects on minority populations and low-income populations." This is done purely for editorial ease.

Endnote 2: On May 24, 1996, the President issued Executive Order 13007 on Indian Sacred Sites to 1) accomodate access to and ceremonial use of Indian sacred sites, and; 2) avoid adversely affecting the physical integrity of such sacred sites.

Endnote 3: For consistency throughout the document, the guidance will use the term "Indian Tribe" when referring to federally recognized tribes and "indigenous population" or "community" when generally referring to Native American, American Indian, Alaska Native, and/or Natrive Hawaiian peoples. Under environmetnal justice, the Agency's policy is to interact with both the tribal government on a government-to-government basis, as well as with any affected or interested indigenous person(s) as public stakeholders.

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EPA Draft Environmental Justice Guidance - Chapter 2

2.0 KEY TERMS AND FACTORS FOR CONSIDERATION IN EVALUATING ENVIRONMENTAL JUSTICE CONCERNS

The purpose of this section is to introduce key terms and concepts to heighten the EPA analyst's awareness of how disproportionately high and adverse effects may be identified. The discussion is based on draft guidance prepared by a task force of the Interagency Working Group on Environmental Justice (IWG). The IWG was created by Executive Order 12898 and is comprised of the heads (or representatives) of 17 departments and agencies.

The identification and analysis of disproportionately high and adverse human health or environmental effects on minority communities and low-income communities should occur throughout the NEPA process, from the initial phases of the screening analysis through the consideration and communication of all alternatives and associated mitigation techniques.

In conducting an EPA NEPA analysis sensitive to environmental justice concerns, the inter-disciplinary team of EPA NEPA analysts (NEPA Analytical Team or (NAT)), should have an understanding of key terms central to environmental justice and should understand what factors need to be considered to ensure that all relevant concerns are identified and evaluated in a direct and explicit manner. The team should include experts familiar with available and appropriate public participation procedures and strategies and, where such concerns may arise, individuals familiar with the unique concerns of Native American Tribes and populations. Developing a keen sensitivity to potential environmental justice concerns and modifying the scope of the analysis can have a dramatic impact on whether environmental justice concerns are identified and addressed adequately and appropriately. Therefore, the NAT must be sensitive to what issues and factors to look for to avoid the possibility that disproportionately high and adverse effects may be inadvertently missed, incorrectly characterized, or inappropriately minimized. To better avoid potential environmental justice oversights, the NAT should work closely with the affected community in drafting an EIS or EA, and where the community's concerns warrant, EPA should formalize this interaction (e.g., community advisory boards).

Exhibit 2 provides a listing of IWG-developed draft guidance on key terms in Executive Order 12898 that are pertinent to environmental justice analyses. That guidance was developed to assist federal and agencies in conducting analyses of disproportionately high and adverse effects of programs, policies, and activities. At present, the IWG guidance is in draft form and it may be revised in the future. As can be seen, the guidance is not static but provides for informed judgment in every case; this means that EPA NEPA analysts will need to make careful decisions to ensure that environmental justice concerns are identified and addressed.



Exhibit 2. Definitions Pertinent to Environmental Justice Analyses

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2.1 Defining Minority and/or Low-Income Population

The purpose of this section is to assist the analyst in determining whether there is a minority community or low-income community that may be addressed in the scope of the NEPA analysis.

2.1.1 Minority and Minority Population

The first part of the guidance on minority population provided by the IWG provides a numeric measure: over 50 percent of the affected area. The remainder of the guidance calls for judgment and sensitivity. It is important that the NAT consider both the circumstances of any groups residing within the study area, as well as the percentage of the affected community that is composed of minority peoples.

Within its guidance, the IWG explains that a minority population may be present if the minority population percentage of the affected area is "meaningfully greater" than the minority population percentage in the general population or other "appropriate unit of geographic analysis." The IWG also advises agencies not to "artificially dilute or inflate" the affected minority population when selecting the appropriate unit of geographic analysis. Clearly, a key element here is the selection of the appropriate level of geographic analysis; that is, selecting a comparison population to which the population in the affected area will be compared to identify if there are "meaningfully greater" percentages. In EPA's NEPA analyses, analysts should use the potentially affected population under various alternatives as a benchmark for comparison wherever possible. In addition, a simple demographic comparison to the next larger geographic area or political jurisdiction should be presented to put population characteristics in context and allow the analyst to judge whether alternatives adequately distinguish among populations. For example, all preliminary locations for a project could fall in minority neighborhoods, so a comparison among them would not reveal any population differences so another alternative would be necessary to allow any disproportionately high and adverse effects to be identified.

The fact that census data can only be disaggregated to certain prescribed levels (e.g., census tracts, census blocks) suggests that pockets of minority or low-income communities, including those that may be experiencing disproportionately high and adverse effects, may be missed in a traditional census tract-based analysis. In addition to identifying the proportion of the population of individual census tracts that is composed of minority individuals, analysts should attempt to identify whether high concentration "pockets" of minority populations are evidenced in specific geographic areas.

The IWG draft guidance also advises agencies to consider both groups of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals, where either type of group "experiences common conditions" of environmental exposure or effect within the guidance provided for minority population. This can result from cultural practices, educational back- grounds, or the median age of community residents (e.g., disproportionate numbers of elderly residents, children, or women of child bearing age may be more susceptible to environmental risks).

A factor that should be considered in assessing the presence of a minority community is that a minority group that is a relatively small percentage of the total population surrounding the project may experience a disproportionately high and adverse effect due to the group's use of or dependence on potentially affected natural resources or the community's daily exposure to environmental pollutants as a result of their close proximity to the source. The data may show that a distinct minority population may be below the thresholds in the IWG draft guidance on minority population. However, as a result of particular cultural practices that population may experience disproportionately high and adverse effects. For example, the construction of a new treatment plant that will discharge to a river or stream that is used by subsistence anglers may affect that proportion of the total population. Also, potential effects to on- or off-reservation tribal resources (e.g., treaty-protected resources, cultural resources and/or sacred sites) may disproportionately affect the local Native American community and implicate the federal trust responsibility to tribes. The analytical team should look at each situation on a case-by-case basis to determine if there may be

disproportionately high and adverse effects on a minority population.

The analytical team should make every effort to identify the presence of distinct minority communities both residing within and in close proximity to the proposed project, and those minority groups that may be dependent upon natural resources that could be potentially affected by the proposed action. Non-traditional data gathering techniques, including outreach to community-based organizations and tribal governments early in the screening process, may be the best approach for identifying distinct minority communities and/or tribal interests within the study area. See Chapter 4 for a discussion of public outreach techniques.

2.1.2 Low-Income Population

As shown in Exhibit 2, the IWG's draft guidance states that low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider a community a group of individuals living in geographic proximity to one another or set of individuals (such as migrant workers or Native Americans) where either type of group experiences common conditions of environmental exposure of effect.

As with the identification of minority communities, the level of aggregation of available data is an issue of concern when seeking to determine whether one or more low-income communities may be affected by a project. Also, as with minority communities, "pockets" of low-income individuals may be masked by aggregated data. The level of aggregation of data, as well as how current the available data are, should be taken into account by the EPA analytical team.

Factors that are characteristic of low-income communities and may assist in identifying low-income communities and populations include: limited access to health care, an inadequate, overburdened or aged infrastructure, and particular dependence of the community, or components of the community, on subsistence living (e.g., subsistence fishing, hunting, gathering or farming). In some cases, these factors can be evaluated directly from traditional information sources. For example, the age and condition of water treatment facilities and presence of lead service lines should be available from municipal utilities. Outreach to community groups may be the most reliable data collection method in other cases, such as those where the degree to which the cultural and dietary habits of low-income or minority families and their economic condition dictate subsistence living. Consequently, where the community median household income may exceed that of the poverty line, conditions generally associated with low-income communities may be present, resulting in cumulative effects that may meet a threshold for environment justice concerns to the EPA NAT.

2.2 Considering Effects

This section discusses the term "disproportionately high and adverse human health or environmental effects" and provides an overview of some factors that should be considered in assessing the presence of such effects. It also addresses how the concept of environmental justice plays in conducting cumulative and indirect impact analyses in support of NEPA.

2.2.1 Disproportionately High and Adverse Effect

Disproportionately high and adverse effects encompass both human health and environmental effects. The IWG's draft guidance suggests the need for the analyst to exercise informed judgments as to what constitutes "disproportionate" as well as "high and adverse." This, in turn, suggests some level of comparative analysis with the conditions faced by an appropriate comparison population. As noted above, alternatives need to be drawn so that the potentially affected populations under various alternatives are distinctive and allow disproportion to be assessed.

2.2.2 Cumulative and Indirect Effects

EPA NEPA analyses must consider the cumulative effects of the proposed action and other environmental stresses on the community. Cumulative impacts are defined (40 CFR 1508.7) as "the incremental impact(s) of the action when added to other past, present, and reasonably foreseeable future actions...." For example, when considering a project that will have a permitted discharge to the surrounding surface waters, even though the discharge may be "insignificant" in and of itself and may not exceed health or water quality standards, it may be of concern to populations who rely on subsistence living patterns (i.e., fishing) that already receive public water through lead service lines; the cumulative effects associated with both the discharge and the lead service lines must be taken into account. In such cases, mitigation measures need to be developed and analyzed to reduce the cumulative. In addition, minority populations and low-income populations are often located in areas or environments that may already suffer from prior degradation. EPA Analysts need to place special emphasis on other sources of environmental stress within the region, both existing and projected. Common variables of concern may include:

- * Number/concentration of point and nonpoint release sources, including both permitted and non-permitted.
- * Presence of listed or highly ranked toxic pollutants with high exposure potential (e.g., presence of toxic pollutants included within EPA's 33/50 program).
- * Multiple exposure sources and/or paths for the same pollutant.
- * Potential for aggravated susceptibility due to existing air pollution (in urban areas), lead poisoning, existence of abandoned toxic sites.
- * Other sources of environmental contamination and human health effects.

Source data, including both existing and projected sources, yielding projected effects in concert with that from the resulting proposed action should be analyzed with respect to minority or low-income receptors. As noted above, these include cultural, health and occupation-related variables such as:

- * Health data reflective of the community (e.g., abnormal cancer rates, infant and childhood mortality, low birth weight rate, blood-lead levels).
- * Occupational exposures to environmental stresses which may exceed those experienced by the general population.
- * Diets, or differential patterns of consumption of natural resources (See Endnote 4), which may suggest increased exposures to environmental pathways presenting potential health risk.

With respect to natural resources, analysts should look to the community's dependence on natural resources for its economic base (e.g., tourism and cash crops) as well as the cultural values that the community and/or Indian Tribe may place on a natural resource at risk.

EISs and EAs also have to address indirect impacts (40 CFR 1502.16(b), 1508.8(b) 1508.9). Indirect impacts are those that are caused by the action and are reasonably foreseeable, but that occur later in time and/or at a distance (40 CFR 1508.8(b)). Indirect effects include growth effects related to induced changes in the pattern of land use; population density and/or changes to infrastructures; or growth rates and related effects to the air, water and surrounding ecosystems.

Increased urbanization may occur around a new facility due to increased employment or due to transportation system upgrades. This may result in disproportionately high and adverse effects to low-income communities and minority communities due to increased air pollution, lower housing values, and reduced access to fishing/farming locations. In addition, recreational lands and water may be indirectly affected by government actions. In the case of activities potentially affecting Native Americans, potential impacts to sacred sites and/or other natural resources used for cultural

purposes. Proposed actions may result in business failures, and associated unemployment, erosion of tax bases, and reduced public services. These types of effects may be exacerbated on low-income communities and minority communities due to an inability to relocate, travel long distances to find alternative means of employment, or attract new industry or commerce.

The potential for indirect impacts to affect a community is best understood when the analytical team is thoroughly familiar with the local community. It is important that EPA NEPA analysts gain a full understanding of potential cultural impacts to the community through direct communication using effective public participation and consultation. A discussion of public participation approaches appears in Chapter 4.

2.2.3 Environmental Exposure

Executive Order 12898 provides that environmental human health research, whenever practicable and appropriate, shall include diverse segments of the population in epidemiological and clinical studies, including segments at high risk from environmental hazards, such as minority and low-income populations and workers who may be exposed to substantial environmental hazards. The Executive Order further states that environmental human health analyses, whenever practicable and appropriate, shall identify multiple and cumulative exposures.

The IWG draft guidance on the term "environmental hazard" for the purpose of research, data collection and analysis in compliance with the Executive Order, states that it is "a chemical, biological, or physical agent, situation, or source that has the potential for deleterious effects to the environment and/or human health." The IWG points out that the factors that may be important in defining a *substantial* (See Endnote 5) environmental hazard are the likelihood, seriousness, and the magnitude of the impact. The IWG also provides guidance for "multiple environmental exposure" and "cumulative environmental exposure," as shown in Exhibit 2.

The EPA NAT should include individuals who are familiar with the collection and analysis of data assessing the potential environmental and human health risks potentially borne by minority communities and low-income communities as a result of the project or activity. It is important that EPA NEPA analysts gain a full understanding of potential environmental risks to the community through direct communication using effective public participation and consultation. An assessment of such potential risks should then be used to determine whether disproportionately high and adverse effects may be borne by minority communities or low-income communities.

2.3 Summary of Factors to Consider in Environmental Justice Analyses

This section provides an overview of many of the factors that should be considered when identifying and evaluating environmental justice concerns. Given the subjective nature of some of the elements that are important to environmental justice analyses, some consideration of the factors or characteristics that may lead to the occurrence or incidence of potential disproportionately high and adverse effects to a community may prove to be useful when conducting such analyses. EPA's Office of Environmental Justice points out that an understanding of the underlying factors that contribute to environmental justice concerns allows for a more thorough identification of the concerns and the development of more effective mitigation measures.

In focusing the identification of environmental justice concerns, the EPA NAT may approach the analysis of environmental justice from three vantage points: 1) whether there exists a potential for disproportionate risk; 2) whether communities have been sufficiently involved in the decision-making process; and 3) whether communities currently suffer from environmental and health risks or hazards. The factors listed in this section are provided within the context of these three approaches for identifying potential environmental justice concerns and provide the EPA NAT with a starting point in determining what factors to consider in an environmental justice assessment. However, almost every situation will have its own nuances. As such, the EPA NAT should be

prepared to apply these factors flexibly to fit a specific situation, just as the IWG draft guidance provided above may require judgements to ensure that communities are defined in a fair manner. (See Exhibit 3 for Summary of Factors)



Exhibit 3. Summary of Factors to Consider in Environmental Justice

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Endnote 4: The IWG draft guidance describes differential patterns of consumption of natural resources as relating to "subsistence and differential patterns of subsistence, and means differences in rates and/or patterns of fish, water, vegetation and/or wildlife consumption among minority populations or low-income populations, as compared to the general population."

Endnote 5: It should be noted that the factors the IWG is providing for assessing environmental hazard were not necessarily developed in the context of NEPA analyses. These factors are, however, similar to the factors used in determining "significant" physical or natural environmental effects under NEPA.

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4.0 PUBLIC PARTICIPATION

Adequate public participation is crucial to incorporating environmental justice considerations into EPA's NEPA actions, both to enhance the quality of the analyses and to ensure that potentially affected parties are not overlooked and excluded from the process. Public participation under NEPA involves two-way communications, with EPA receiving information, comments, and advice, as well as disseminating information on possible approaches, analyses, and decisions. This is particularly important when there are potential environmental justice issues involved. To sufficiently and adequately address potential environmental justice concerns and communicate with potentially affected communities, the EPA NEPA analytical team should include one or more persons who are familiar with environmental justice issues and appropriate communications strategies. It is important that EPA take steps to encourage and facilitate more active participation by low-income communities and minority communities in its NEPA process. This goal can be accomplished through careful identification of target audiences and aggressive community outreach beyond the traditional forms.

There are established procedures for public participation in NEPA actions and decision-making processes (as in other federal actions). However, these procedures have not always been successful in informing or gaining participation by minority communities and low-income communities. Although they may be most affected, they may be the least informed, simply because of the means of communications used; this can be for any number of obvious reasons, such as language, culture, or education level. In most cases, relatively simple approaches--well within the purview of "standard" public participation techniques--can overcome most barriers to informing and seeking involvement of interested or affected communities. This in turn can ensure that federal decisions are consistent with Executive Order 12898 and enhance the actual and perceived fairness of federal actions.

The first subsection below briefly describes public participation that is required during the NEPA process by CEQ and EPA regulations. The next subsection then identifies a number of the special concerns and unique issues that may arise in addressing environmental justice issues, and identifies several mechanisms that may be used in EPA's NEPA process to address those special concerns and issues.

4.1 Public Participation Under NEPA

Public participation is one of the hallmarks of NEPA, and is reflected in CEQ's and EPA's NEPA regulations. According to 40 CFR 6.400(a), "EPA shall make diligent efforts to involve the public in the environmental review process...." There are several clearly defined steps in public participation under NEPA, and these are described below.

Scoping CEQ regulations require "scoping" following the publication of a notice of intent to prepare an EIS, but before the EIS is prepared. CEQ regulations define scoping as "an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). In general, scoping has three broad purposes: identifying public and agency concerns with a proposed action, defining issues and alternatives to be examined in detail, and saving time by ensuring that relevant issues are identified early and drive the analyses. (See 40 CFR 1500.4(g), 1500.5(d)). A public meeting is held during scoping, with notice of the meeting made in the Federal Register and local newspapers, with other means of announcing public meetings also used, depending on case-specific circumstances.

Scoping for EAs is not addressed in either CEQ or EPA regulations. In practice, EA scoping can range from a process more or less identical to that used for EISs to relatively minimal involvement of outside parties.

CEQ has indicated that the scoping process ends "once the issues and alternatives to be addressed in the EIS have been clearly identified," usually "during the final stages of preparing the draft EIS..." (CEQ "Guidance Regarding NEPA Regulations"). It is emphasized that public participation does not end here, but continues throughout the NEPA process, as described below, and even beyond.

Public review of EISs and EAs As with scoping, CEQ and EPA NEPA regulations clearly specify the means by which the public is involved in reviewing draft and final EISs. EPA regulations require at least one public meeting on all draft EISs (40 CFR Section 6.400(c)). The meeting is generally announced in the Federal Register and in local newspapers and by other means. Regulations also provide other means of soliciting comments and information. Comments must be solicited from other appropriate federal, tribal, state, and local agencies, and from the public, specifically including a request for comments from "those persons or organizations who may be interested or affected" (40 CFR Section 1503.1(a)(4)).

EPA then has to consider and address all comments received on the draft EIS in preparing the final EIS, and final EISs must include responses to comments. As with draft EISs, final EISs are noticed in the Federal Register and elsewhere. Again, interested parties may submit comments on final EISs prior to EPA's final decisions.

EAs must be made available to the public (40 CFR Section 1506.6: C.E.Q. 40 Questions, #38). A combination of methods may be used to provide notice of availability; the methods should be tailored to the needs of particular cases. Traditionally there has been limited public involvement before and during EA preparation by EPA unless there is a question of significance (i.e., some question as to whether an EIS is necessary) or some particular public interest.

Public review of RODs and FNSIs Records of Decision on EISs must be disseminated to all those who commented on the draft or final EIS (40 CFR Section 6.400(e)). No public review is required prior to or after issuance of the ROD. Findings of No Significant Impact on EAs, in contrast, must be made available for public review before they become effective (40 CFR Section 6.400(d)), and this involves at least local notice and advertising. The FNSI and "attendant publication" must state that comments disagreeing with the decision may be submitted, and any such comments must be considered by EPA (40 CFR Section 6.400(d)).

4.2 Mechanisms to Enhance Participation

The public participation provision in Executive Order 12898 and its accompanying memorandum are designed to ensure that there is adequate and effective communication between federal decision makers and affected low-income communities and minority communities. This is consistent with the NEPA mandate to involve the public. The involvement of low-income communities and/or minority communities, however, presents some challenges to what has come to be the "normal" pattern of formal public participation under NEPA.

Thus, in all cases where EPA's initial screening indicates that there is a potential for disproportionately high and adverse effects on low-income and/or minority communities, there should be a more concerted effort to provide information to the potentially affected population and to seek input from this population. Local community members or interest groups with specific interests in, or understandings of, environmental justice issues should be contacted for advice in ensuring adequate public participation for identifying potential areas of concern and mitigating actions. In addition, advice may be sought from ethnic and cultural-based environmental justice networks (e.g., Indigenous Environmental Network, Southwest Network for Environmental and Economic Justice,

Southern Organizing Committee). The *People of Color Environmental Groups Directory* (See Endnote 7) is a valuable major source of information on such local groups and individuals. Similarly, Historically Black Colleges and Universities or other higher education institutions located in areas with or serving predominantly minority or low-income areas, may be able to assist EPA in designing (and participating in) public participation strategies. Exhibit 7 identifies a number of particular communications challenges and possible approaches to overcoming these challenges in addressing environmental justice issues. These should be supplemented by case-specific advice--on challenges and on solutions--that are solicited from local experts and others familiar with both the proposed action and the affected community.

EPA-anticipated impacts and community perceptions of those impacts (and their fairness) can be very different, so both must be considered. When perceptions are the concern, an effort to involve and inform the community can go a long way toward building confidence that EPA's analyses and actions are well-intended and balanced. When actual impacts (i.e., disproportionately high and adverse human health or environmental effects) are the concern, the participation can serve to educate the Agency and help identify the means to mitigate the impacts.



Exhibit 7. Communications Issues Raised by Low-Income and/or Minority Communities

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Minority communities and low-income communities are no different than any other in that there are nearly as many opinions as there are people. Thus, it is important not to focus exclusively on one mechanism (or one person or one group) for disseminating or soliciting information. Rather, it is important to use as many avenues as possible to solicit participation and to disseminate information. For example, when there are formal or informal representatives that purport to speak for a wider population, it is always advisable to seek divergent opinions.

Dr. Robert Bullard, Director of the School of Arts and Sciences at Clark Atlanta University, provides a framework for public participation when addressing environmental justice concerns during the NEPA process. Dr. Bullard points out that effective public involvement strategies have four common characteristics: inclusiveness, representation, parity, and communication. Inclusiveness refers to the assurance that all affected communities and stakeholders are represented and involved in the decision-making process. In terms of representation, he points out that it is crucial that the persons who are representing a specific community or stakeholder group truly reflect that community's, stakeholder's, and constituent's views, values, and norms. Parity involves all stakeholder groups having equal opportunity and capacity to provide input and full participation, as well as an equal voice in the decision-making process. Dr. Bullard further points out that an effective communications strategy accounts for different groups weighing and acting upon government actions and policies differently. An effective communications strategy recognizes, respects, and values cultural diversity of communities and stakeholders that represent a specific race, ethnic group, gender, age, geographic region, and a host of other characteristics.

As mentioned above, a recommended approach to ensure adequate public participation by minority and/or low-income communities when the screening analysis indicates there may be disproportionately high and adverse effects is to include a person familiar with environmental justice public participation issues on the "project review team." CEQ "Guidance Regarding NEPA Regulations" recommends that an interagency project review team be used when appropriate, with the team functioning as a source of information, a coordination mechanism, and an expert review team. When environmental justice issues must be faced, the review team should consult with the

local community--including but not limited to organized groups concerned with environmental justice--during and following scoping and should provide specialized expertise to EIS preparers.

The following are additional mechanisms for enhancing participation in the NEPA process: 1) allow public review of RODs; 2) government-to-government consultation with tribal governments, including formal request for Indian Tribes to seek participation as Cooperating Agencies; 3) Community Advisory Boards for the development of NEPA documents; 4) community consultants; and 5) technical assistance to affected communities to enhance understanding of proposed action, technical documents, and full range of potential alternatives and mitigation measures.

In general, the "extra" effort expended in actively soliciting community involvement should reflect the potential significance (or disproportionate nature) of the effects and/or the level of community concern over potential impacts. As noted above, however, there should be some effort to communicate with stakeholders in all cases, including EAs, where the screening analysis identifies potential disproportionately high and adverse effects. Although the health or environmental impacts analyzed in EAs may not be "significant," they may be perceived as significant by affected parties. Although this concern would not trigger an EIS, it should trigger more EIS-like scoping and public participation prior to and following EA preparation. Similarly, an EIS-like public participation process should be undertaken for EAs when social or economic impacts will be or are perceived to be substantial, even when the health or environmental impacts are not expected to be significant.

Endnote 7: Environmental Justice Resource Center. *People of Color Environmental Groups: 1994-95 Directory*. Prepared by Dr. Robert D. Bullard, Clark Atlanta University, Atlanta, GA. 1994.

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EPA Draft Environmental Justice Guidance - Chapter 5

5.0 METHODS AND TOOLS FOR IDENTIFYING AND ASSESSING DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS

A fundamental step for incorporating environmental justice concerns into EPA NEPA compliance activities is identifying minority and/or low-income communities that may bear disproportionately high and adverse effects as a result of a proposed action. Once these minority and/or low-income communities are identified and located, the potential for disproportionately high and adverse effects to these communities must be assessed. It is important to understand where such communities are located and how the lives and livelihoods of members of these communities may be impacted by proposed and alternative actions. Minority communities and low-income communities are likely to be dependent upon their surrounding environment (e.g., subsistence living), more susceptible to pollution and environmental degradation (e.g., reduced access to health care), and are often less mobile or transient than other populations (e.g., unable to relocate to avoid potential impacts). Each of these factors can contribute to minority and/or low-income communities bearing disproportionately high and adverse effects. Therefore, developing an understanding of where these communities are located and how they may be particularly impacted by government actions should be a fundamental aspect of the EA and EIS development process.

Currently, EAs and EISs generally evaluate and compare potential environmental, ecological, economic and/or human health risk impacts among and between broadly defined affected areas and populations. Potential impacts to smaller populations, individual communities, neighborhoods, census tracts, or environments (e.g., single lake or watershed within a larger affected area) are not generally isolated, or disassociated from total impacts.

Minority and/or low-income communities are often concentrated in small geographical areas within the larger geographically and/or economically defined population center targeted for study. Minority communities and low-income communities may comprise a very small percentage of the total population and/or geographical area. Therefore, the assumptions and inputs used in conjunction with traditional analytical tools for studying potential impacts under NEPA, and the results of the analyses, may not fully reflect the impacts that may be borne by these smaller communities or populations. An analysis of disproportionate impacts will develop an understanding of how the total potential impacts vary across individual communities. This allows analysts to identify and understand what portion of the total impacts may be borne by minority or low-income communities, to assess whether they are disproportionately high and adverse, and to develop alternatives and mitigation measures if necessary.

As described in Chapter 3, the first step in identifying the potential for environmental justice concerns is to characterize the population affected by the proposed action in terms of racial and ethnic composition and in terms of relative income distribution. The composition of the population should then be compared to the characteristics of the population (e.g., percentage of minority populations residing near a proposed project versus the percentage of minority populations located within a single or multiple-county area surrounding the proposed project). Populations surrounding the proposed project should be characterized in terms of income distribution levels, as well as in terms of racial and ethnic diversity.

Many of the potential effects that may be borne by minority and/or low-income communities may be analyzed or assessed using the same analytical tools that are currently used in the development of EAs and EISs. However, once a potential environmental justice issue is identified, these tools may need to be modified or--more likely--the scope of the analyses may need to be narrowed to focus on

a smaller affected area or population.

Several types of analytical tools are currently available and are being refined and/or modified to assist analysts and decision makers in identifying potential environmental justice concerns and assessing potentially disproportionately high and adverse effects on minority and low-income communities. The following sections provide an overview of some of the available tools and the types of analyses that may be useful for identifying and assessing disproportionately high and adverse effects (by evaluating both total effects and effects on a smaller scale). It is not an exhaustive listing of available tools, since many tools for identifying and assessing environmental justice concerns are still being developed, and it is not meant to promote or endorse one type of tool or analysis over any other. The application of any tool is dependent upon the type of study, the particular attributes of the area under study, and the data available to undertake the study.

5.1 Locational/Distributional Tools

Maps, aerial photographs, and geographical information systems (GIS) can be used to locate geographical areas where potential environmental justice issues may exist. Local maps and aerial photographs may provide a "snap shot," or general overview, of the locations of minority or low-income populations or communities and the proximity of the proposed project to these populations or communities. They also can identify key natural resources that may be affected. Although such tools are relatively simplistic, they may be useful for identifying distinct communities within a geographical area surrounding a candidate site, and for identifying clusters of facilities or sites that may contribute to cumulative impacts to a given region or community. By consulting maps or photographs that depict the locations of minority or low-income communities, as well as maps of the same geographical area that depict the locations of hazardous waste facilities, Superfund sites, Toxics Release Inventory facility sites, and/or wastewater discharges, analysts and EPA decision makers can gain a general understanding of the spatial relationships between the proposed project and the surrounding communities. These tools can assist the EPA NAT in identifying existing sources of environmental pollution and their proximity to minority and/or low-income communities.

Geographical Information Systems (GIS) provide a much more powerful tool for identifying and locating populations of concern. GIS technologies are useful for characterizing environmental justice issues by identifying the locations of minority communities that potentially may be affected by proposed actions and providing a visual understanding of how potential impacts may be distributed within a geographical area. GIS provides the technology for displaying and overlaying locational information and population and site characterization information on one or more maps. GIS allows for the visual display of vast amounts of spatially oriented information. In addition, GIS systems can be used to display alternative "what if" scenarios and provide for relatively quick and easy general comparisons of the potential impacts presented by alternative locations.

Several EPA Headquarters and Regional offices are using and/or investigating the use of GIS technologies for identifying and analyzing environmental justice issues. GIS systems such as ARC/INFO and Land view II are geographic references or computerized atlases. These systems can create maps using digitized geographical boundary files such as the U.S. Census Bureau TIGER/Line '92 files, and other commercially available digitized boundary files (e.g., zip code boundaries, county boundaries, water body boundaries) to display locational information and geographical areas. GIS systems also can incorporate, and graphically display on computer-generated maps, other population and demographic information that is available in digitized format. Land view II includes 1990 demographic and economic data from the Bureau of Census, including population and housing characteristics and summary information on income, education levels, employment, race, and age. The census data are available in two databases, STF1A and STF3A, which contain digitized data files. The census databases are then spatially linked to the TIGER files that contain geographic and political boundaries. Each county in the census database is divided into several census tracts that are subdivided into census blocks. The blocks are aggregated

into block groups containing between 250 to 550 housing units. This level of data aggregation allows the user to identify locations of relatively small, homogeneous communities and to visualize, on the computer screen, the relative proximity of these communities to the proposed project under consideration and mitigation activities.

GIS allows users to easily display, on a single map, general locational and demographic information (e.g., zip code boundaries, proposed facility site locations, pollutant concentrations, income level, ethnic background, population density). GIS also will allow a user to display data in terms of policy or decision criteria. For example, income distribution data for individual census tracts may be segregated by percent of population below the poverty level (e.g., census blocks shaded differently to correspond to areas where 0 - 25 percent of the population is below the poverty level, 25 - 50 percent is below the poverty level, etc.). GIS also can integrate additional census information on education, employment, race, and age to produce graphic depictions of all of this information on a single map to obtain a comprehensive profile of the communities surrounding the proposed project. More than one project can be displayed on a single map to allow for a comparison of population characteristics surrounding the proposed project. Again, the maps generated by the GIS are useful tools for identifying minority and/or low-income communities that should be targeted for further study due to potential environmental justice concerns.

Although the availability of census demographic information in digitized format can significantly enhance NEPA analytical capabilities, and can be particularly useful for environmental justice analyses, the EPA NAT should keep in mind that there are limitations associated with the accuracy of census information due to the manner in which the data are collected and tabulated. Census data are useful for screening analyses, but results should always be validated through public participation mechanisms, other data sources, or by touring the community and talking with local officials and community leaders.

Many other types of information pertinent to NEPA project evaluations also are available for use in GIS systems. For example, EPA has made available portions of the Toxics Release Inventory (TRI) database (including facility locations), the Biennial Reporting System (BRS) database, the Aerometric Information Retrieval System (AIRS), the CERCLA Information System (CERCLIS), and the Permit Compliance System (PCS), in digitized data files for use in GIS applications. DOT's chemicals in transit information is also available for GIS applications.

To enhance the applicability of GIS technologies to NEPA assessments, including the assessment of potential cumulative impacts from existing and proposed projects, the geographical and demographic information provided in Census databases can be integrated with other available EPA information (e.g., facilities located within particular zip codes or counties that reported releases or emissions of a particular chemical in TRI reports, locations of NPL sites, etc.) and integrated with other NEPA factors using digitized data sets on soils, power lines, roads, streams, sources of electricity, locations of threatened and endangered species, and existing archaeological sites. These additional data sets are readily available from the U.S. Forest Service, the U.S. Geological Survey, the Department of Commerce, and state and local government agencies. Additional maps depicting community-specific issues (e.g., locations of subsistence farmers and locations of water bodies supporting subsistence fishing activities) also can be compiled, digitized and incorporated into a GIS system to further depict and analyze more specific environmental justice issues and concerns.

Other GIS, or computer mapping, systems that may enhance NEPA analyses of environmental justice concerns include CAMEO (Computer-Aided Management of Emergency Operations) and ALOHA (Areal Locations of Hazardous Atmospheres). CAMEO includes chemical-specific information, facility-specific information from EPA's Chemical Inventory database and TRI database, and transportation information. CAMEO integrates MARPLOT, a mapping application tool that generates maps from U.S. Bureau of Census TIGER files. ALOHA is a modeling tool for estimating the movement and dispersion of gases and estimating pollutant concentrations downwind from the source of a potential spill or emission. ALOHA files can be saved and used in a format

compatible with CAMEO.

5.2 Ecological and Human Health Risk Assessments

Executive Order 12898 provides for agencies to determine if a proposed action will result in disproportionately high and adverse effects to minority or low-income populations. Due to the fact that the characteristics of these communities and populations may differ significantly from the characteristics of the larger affected population, analyses should address both the minority or low-income community/population and the comparison communities/populations. See Chapter 2 for a discussion of the environmental and socioeconomic factors that should be considered in identifying and assessing disproportionately high and adverse effects.

EPA has a formal risk analysis process which consists of two related, but separate, processes: risk assessment and risk management. Risk assessment characterizes the likelihood for a chemical or substance to cause adverse health effects to humans and can provide a means for assessing the possible impacts on a population, if exposure occurs. Risk assessment provides an estimate of the probability that human exposure to a chemical agent will result in an adverse health effect to the exposed individual, or an estimate of the incidence of the effect upon an exposed population. Risk management is the process whereby it is decided what actions are appropriate, given an estimate of potential risks and due consideration to other relevant factors. Information developed in the risk assessment process is used to guide decision makers in determining the appropriate action to take within the risk management process. When making risk management decisions in the context of environmental justice concerns, a number of factors should be considered along with human health risk calculations or evaluations. These include social concerns, economic concerns, and acceptance of the proposed action by the affected communities. Within the context of risk management, there is an opportunity to consider relevant environmental justice issues. In the risk management process, decisions are made regarding acceptable levels of exposure and risk.

Risk assessment, as conducted by EPA, conforms to the Agency's published guidelines that include four distinct parts: Hazard Identification, Dose-Response Analysis, Exposure Assessment, and Risk Characterization. These four parts provide the analytical tools for identifying disproportionately high and adverse effects. During the risk management process, criteria must be developed to guide the weighing of information. These criteria provide the basis for risk-based decisions with regard to disproportionately high and adverse effects. For example, risk assessments usually do not account for exposure traits of racial and ethnic groups or accurately account for actual environmental harm to human health where the population density is low (e.g., rural communities, Indian Country). Human activity patterns governed by customs, social class, and ethnic and racial cultures may be introduced and considered during the risk management process to allow for the identification of disproportionately high and adverse effects.

To ensure that environmental justice concerns are considered within the risk management process, risk assessments should be conducted to determine exposure pathways and potential effects and the affected community should be involved in the development and implementation of the process. This can then be overlaid with information obtained from locational analyses using GIS and census data during the risk management process to identify minority or low-income populations that are located within the identified exposure pathways. Racial, ethnic, and cultural information can then be used to further refine the risk management process to account for disproportionately high and adverse effects.

To enhance the analysis of disproportionately high and adverse effects within EPA's health assessment studies, several efforts are underway to make relevant health and exposure information available to these studies. EPA's Office of Research and Development is currently developing the National Human Exposure Assessment Survey (NHEXAS). This survey is designed to generate a human exposure database to address some of the geographic and demographic questions relevant to environmental justice issues. NHEXAS will address exposure concerns by providing information on the magnitude, extent, and causes of human exposure.

EPA's Office of Policy, Planning, and Evaluation is currently developing an environmental justice database that will integrate health effects data from the National Health and Nutrition Examination Survey III (NHANES-III), demographic data from the 1990 Census, environmental data from air monitoring stations, and the Toxic Release Inventory database. This database integration will assist EPA staff in developing disease correlations with air exposure data in high impact populations.

Ecological assessments conducted as components of EAs and EISs generally involve identifying the natural resources (e.g., air, water, soils) that will be used by proposed project or activity and the potentially affected environments (e.g., watersheds, wetlands, wildlife habitats) that may be impacted by the proposed project (including alternatives). After a general cataloging and description of the surrounding environmental and ecological resources is compiled, the potential changes and impacts of the proposed action and alternative actions are assessed. Often, these analyses do not fully substantiate the beneficial or adverse effects on the surrounding geographical area or communities within the area. Instead, impacts may be described generally, with an assumption that they are distributed equally across all communities or residents within the affected region or area. As a consequence, the analysis may overlook or ignore environmental justice concerns. If adverse impacts are not quantified, then special consideration should be given to whether potential impacts could be borne by minority communities or low-income communities residing within the larger area and, if necessary, separate analyses should be designed and conducted to assess this. As discussed above, GIS systems can sometimes be used to identify such populations and to characterize the environments where the populations reside. In addition, county and state planning agencies and housing authorities may be useful sources of information for characterizing the unique aspects and vulnerabilities of these populations.

If environmental, ecological, or human health impacts to the affected geographical area are quantified, the distribution of such impacts should be assessed. The study should attempt to estimate the proportion of impacts borne by the "average" resident of an area and the impacts borne by the members of low-income or minority communities. While traditional risk modeling may not always be used in the NEPA process, impact assessments and risk management tools should be tailored to reflect the characteristics of these communities and study assumptions should reflect the characteristics of the individuals residing in low-income communities and minority-populated communities (i.e., model assumptions should reflect the general health of these individuals and their general living conditions and unique locations relative to pollutant sources). When tailoring risk management tools to consider the distribution of impacts to low-income and/or minority communities, differential patterns of subsistence consumption on natural resources should be considered, including differences in rates of consumption for fish, vegetation, water, and wildlife among ethnic groups and among cultures. Further, it should be recognized that land and water resources not predominantly used by the general population may be important sources of consumption, economy, cultural use, and/or recreation for minority and/or low-income communities. Degradation of these resources may result in direct and disproportionately high and adverse effects to minority and/or low-income communities.

5.3 Socioeconomic Analyses

The analysis and understanding of potential socioeconomic impacts is also important. CEQ regulations note that economic or social effects alone do not trigger an EIS (40 CFR Section 1508.14). However, if environmental justice concerns are identified during the screening analysis or during the development of an EA, the potential interrelated socioeconomic impacts to both the total affected population (or a "control" population) and to the low-income and/or minority communities of concern should be evaluated, even in the absence of significant physical environmental impacts. Cultural or Social Impact Assessments are another tool for analyzing specific socioeconomic impacts to a community that shares a common cultural or spiritual environment.

In the development of EAs and EISs, deterministic models are generally used to predict potential impacts that a particular action may have upon particular socioeconomic indicators (e.g., the level of employment and changes to income distribution or property values) for the community surrounding the proposed project. Standard models provide for analyses of the potential effects that an action may have upon the local economy in both the short term, due to transient or temporary activities (e.g., construction, facility planning and startup activities), and the long term, due to sustained impacts to the area (e.g., permanent employment opportunities, reduction in housing quality, degradation of existing environment). Generally, NEPA modeling activities measure potential shifts in indicators such as income distribution and employment levels across general income distribution categories (e.g., percentage change in annual income to portion of affected population earning less than \$15,000, between \$15,000 to \$20,000, etc.). Standard socioeconomic models also can be used to predict impacts that proposed actions and alternatives may have upon available housing stock, housing quality, and property values.

Generally, standard socioeconomic models are employed to predict shifts and changes in particular socioeconomic indicators such as employment, income levels, and housing quality upon a large geographical area or population center, often a standard, pre-defined economic trade area. The data and information provided as inputs to the model and assumptions made in employing the model (including economic conditions and multipliers) broadly characterize the entire population of the large geographical area or population center surrounding the proposed project. The results of these modeling efforts may include potential impacts to various categories within the overall population characterized by income level or by housing category. However, these models generally do not allow (or at least have not been used so as to allow) for a distributional analysis of potential impacts to specific communities, individual populations, or to small geographical areas.

To predict or characterize more accurately the potential disproportionately high and adverse effects to minority or low-income communities and account for potential environmental justice concerns, standard socioeconomic models currently used for EAs and EISs may have to be modified or specifically tailored to account for an array of new variables, such as subsistence living, treaty-protected resources, cultural use of natural resources, sacred sites, dependence on public transit, community cohesion, and a relatively unskilled labor base. Environmental justice issues and concerns may be integrated into some traditional socioeconomic analyses by first employing scoping activities and screening tools to identify potential minority and/or low-income communities prior to the employment of specific modeling techniques. It then may be possible to tailor modeling assumptions and input data on specific populations or targeted communities, rather than apply standard modeling techniques to large economic trade areas or standard metropolitan areas and using average input parameters that may not reflect adequately the characteristics of minority or low-income communities (i.e., alter model assumptions to characterize the population affected by the environmental justice concern, rather than characterize the average individual in the entire study area). As noted above, Census databases contain demographic information (e.g., income levels, race, age, employment levels) at the census tract and census block levels. Other potential sources of information include tribal, state and local planning agencies, and state housing, commerce, and welfare agencies. EPA analysts should keep in mind that some information on the characteristics of local communities and environments may be available only from community leaders, local government offices, and/or members of the community. Some information may be available from transcripts of public concerns raised at hearings for other government projects within the same region. In some cases, analysts may need to conduct interviews of local community leaders and members of the targeted population.

One option for modifying or tailoring socioeconomic analyses to identify and evaluate environmental justice concerns is to develop index or ranking systems for identifying and scoring potential disproportionately high and adverse effects to minority and/or low-income communities. Such an index or ranking system should be applied to specifically defined or targeted areas and used as a screening tool to identify environmental justice concerns in communities surrounding one or more candidate locations. Candidate locations that result in high index scores or rankings can either

be dropped from consideration or targeted for additional and more thorough socioeconomic and risk analyses to investigate further potential disproportionately high and adverse effects.

An environmental justice screening index may be as simple as defining several levels or categories of potential impacts (e.g., changes in employment levels, changes in income levels, and changes in overall health levels) or defining and scoring several socioeconomic indicators (e.g., dependence on subsistence farming or fishing, percent of population below poverty level, average property value) and weighing each category of impact as to its importance to contributing to environmental justice issues. Decision criteria (e.g., undertake further detailed social impact analyses, drop candidate location from consideration) could then be set for different ranges of index scores or rankings. The index also may combine preliminary information on potential economic impacts with information on other potential impacts (e.g., environmental degradation, air emissions) to assign decision criteria for additional targeted analyses or studies.

EPA Region 6 (See Endnote 8) developed a relatively sophisticated ranking scheme to determine whether an environmental justice indicator exists. The formula provides a means for determining whether an environmental justice situation exists. The formula and corresponding definitions are shown in Exhibit 8.



EPA Region 6 EJ Index

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Region 6 evaluates sites using an environmental justice formula and ranks facilities or actions on a scale of 0 to 100. Regional officials point out that although higher scores can indicate greater potential environmental justice concerns, the population density, percent minority population, and percent of economically depressed household data are the more important analytical factors. When evaluated independently, they often provide greater insight into potential environmental justice concerns and can be used alone to rank sites. Also, the user should realize that even a location with an index ranking of zero can have significant environmental justice concerns. For example, an unpopulated area will rank a zero, but if owned and/or used by minority and/or low-income groups, the site may have significant environmental justice importance.

Endnote 8: US EPA Region 6, Office of Planning and Analysis. "Computer Assisted Environmental Justice Index Methodology." July, 1994.

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